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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/813,893 | 03/31/2004 | Frederick L. Travelute III | 3000.193 | 5764 |
| 21176 7590 04/19/2007 SUMMA, ALLAN & ADDITON, P.A. 11610 NORTH COMMUNITY HOUSE ROAD SUITE 200 CHARLOTTE, NC 28277 | | | EXAMINER VO, HAI | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1771 | |

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 04/19/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/813,893

Applicant(s)

TRAVELUTE ET AL.

Examiner

Hai Vo

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13-21 and 40-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-21 and 40-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. The 102 art rejection over Travelute et al (US 5,407,625) have been withdrawn in view of the present arguments. Travelute does not teach the fiber with irregular surface elements. However, other art rejections are maintained.
2. The obviousness-type double patenting rejections have been overcome in view of the terminal disclaimer filed on 01/22/2007.

Terminal Disclaimer

3. The terminal disclaimer filed on 01/22/2007 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US Patent Application No. 11/ 091,413 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-6, 10, 11, and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Siggel et al (US 4,164,603) in view of Nichols et al (US 6,485,829) and Soehngen et al (US 4,290,987). Siggel discloses a filament of polyester having a plurality of voids occupying from 5 to 50 volume %, which is within the claimed range (column 5, lines 5-7). The filament has 12 to 18 cells per axial cross section (column 8, lines 50-51). The filament contains silicone and a nucleating agent which aids the formation of the voids during the spinning process (column 2, lines 55-60). Siggel discloses the filament with a density lower than 1 g/cc can be obtained (column 4, lines 19-20). There are no burst surface areas in the filament (column 9, lines 28-29). Likewise, the filament has a smooth surface. The filaments are useful as an upholstery material which reads on Applicants' fabric material (example 3). Siggel does not specifically disclose the use of copolymer of polyester and polyethylene glycol for the filaments. Nichols, however, discloses a non-woven fabric material made from filaments of a polyester modified with polyethylene glycol in the amount of 6% by weight to 16% by weight to increase the wetting and wicking properties of the fabric while maintaining the elasticity of the polyester fibers. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the copolymer of polyester and polyethylene glycol for the polyester filament motivated by the desire to increase the wetting and wicking properties of the fabric while maintaining the elasticity of the polyester fibers.

It appears that Siggel as modified Nichols uses the same copolymer as Applicants, namely copolymer comprising polyester and polyethylene glycol present in amount of between about 6 to 10 wt%. Therefore, it is the examiner's position that the polyester copolymer would substantially inherently have a greater elasticity than a corresponding monomer-based polyester.

Siggel discloses the use of the nucleating agent but Siggel does not specifically disclose how much the nucleating agent is used. Soehngen, however, teaches the use of silica or PTFE particle with a particle size of 0.5 to 1 microns as a nucleating agent for the formation of polyester filaments (column 5, lines 25-30, 45-50). Soehngen teaches the nucleating agent present in the amount of 0.01 to 1 % by weight of the polyester composition. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the nucleating agent with the amount as taught by Soehngen motivated by the desire to aid the formation of the voids during the spinning process. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the PTFE particle for the silica as the nucleating agent since PTFE and silica have been shown in the art to be recognized equivalent nucleating agents for low density polyester fibers.

7. Claims 8, 9, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Siggel et al (US 4,164,603) in view of Nichols et al (US 6,485,829) and Soehngen et al (US 4,290,987) as applied to claim 1 above, further in view of JP 08-260285. Siggel does not disclose the fibers having the grooves formed on the fiber

surfaces. JP'285, however, teaches a woven polyester fabric comprising the fibers having the grooves formed on the fiber surfaces to provide a fabric having a high class feeling rich in a lightweight feeling (abstract). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use fibers having the grooves formed on the fiber surfaces motivated by the desire to provide a fabric having a high class feeling rich in a lightweight feeling.

8. Claims 55-57 and 60 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Li et al (US 4,626,390). Li discloses a self-crimping foamed fiber made from polyester having a volume fraction of at least 10 % overlapping with the claimed range (abstract). The foamed fiber has at least 5 cells per axial cross section as shown in figure 5. Li discloses the foamed fiber having a denier of 15 and a density less than 0.9 g/cc (table). Li discloses the fiber having a plurality of closed cells and open cells distributed over the cross-sectional area of the fiber (column 1, lines 10-15). The total stretch ratio of both spinning and drawing is about 5 to 250 (column 5, lines 35-40). As shown in figures 6-10, the fiber has a fibrillated surface. Li does not teach the fiber with irregular longitudinal surface effects. However, in accordance with the specification of the present invention, the surface effects (smooth, fibrillated, channeled and pitted) are dictated by the void volume, cells per axial cross section and total stretch ratio of both spinning and drawing. Li discloses a fiber having the void volume, cells per axial cross section and total stretch ratio of both spinning and drawing within the claimed ranges. Therefore, it is not seen that the fiber could not have surface

effects as set forth in the claims. Accordingly, Li anticipates or strongly suggests the claimed subject matter.

9. Claims 1-7, 10, 11, 13-15, 17-19, 58 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US 4,626,390) in view of Nichols et al (US 6,485,829). Li discloses a self-crimping foamed fiber made from polyester having a volume fraction of at least 10 % encompassing the claimed range (abstract). The foamed fiber has at least 5 cells per axial cross section as shown in figure 5. Li discloses talc present in the amount of 0.2 % by weight (example 3). Li discloses the foamed fiber having a denier of 15 and a density less than 0.9 g/cc (table). Li discloses the fiber having a plurality of closed cells and open cells distributed over the cross-sectional area of the fiber (column 1, lines 10-15). Figure 5 shows that the foamed fibers having a pitted surface. As shown in figures 6-10, the fiber has a fibrillated surface. Li does not specifically disclose the use of copolymer of polyester and polyethylene glycol for the filaments. Nichols, however, discloses a non-woven fabric material made from filaments of a polyester modified with polyethylene glycol in the amount of 6% by weight to 16% by weight to increase the wetting and wicking properties of the fabric while maintaining the elasticity of the polyester fibers. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the copolymer of polyester and polyethylene glycol for the polyester filament motivated by the desire to increase the wetting and wicking properties of the fabric while maintaining the elasticity of the polyester fibers.

It appears that Li as modified Nichols uses the same copolymer as Applicants, namely copolymer comprising polyester and polyethylene glycol present in amount of between about 6 to 10 wt%. Therefore, it is the examiner's position that the polyester copolymer would substantially inherently have a greater elasticity than a corresponding monomer-based polyester.

Li does not specifically disclose that the self-crimped foamed fiber is hollow. However, Li mentions the hollow fibers are known in the art. Therefore, there are no reasons why not to form the hollow self-crimped foam fibers. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the hollow self-crimped foamed fibers motivated by the desire to reduce the weight and the cost of the product without affecting the mechanical strength of the fibers.

10. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US 4,626,390) in view of Nichols et al (US 6,485,829) as applied to claim 1 above, further in view of Soehngen et al (US 4,290,987). Li discloses the use of silica as a nucleating agent, but Li does not specifically disclose the use of PTFE particle as the nucleating agent. Soehngen, however, teaches the use of silica or PTFE particle with a particle size of 0.5 to 1 microns as a nucleating agent for the formation of polyester fibers (column 5, lines 25-30, 45-50). Soehngen teaches the nucleating agent present in the amount of 0.01 to 1 % by weight of the polyester composition. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute PTFE particles for silica since two

substances have been shown in the art to be recognized equivalent nucleating agents for formation of polyester fibers.

11. Claims 8, 9, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US 4,626,390) in view of Nichols et al (US 6,485,829) as applied to claim 1 above, further in view of JP 08-260285. Li does not disclose the fibers having the grooves formed on the fiber surfaces. JP'285, however, teaches a woven polyester fabric comprising the fibers having the grooves formed on the fiber surfaces to provide a fabric having a high class feeling rich in a lightweight feeling (abstract). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use fibers having the grooves formed on the fiber surfaces motivated by the desire to provide a fabric having a high class feeling rich in a lightweight feeling.
12. Claims 40-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al (US 4,626,390) in view of Nichols et al (US 6,485,829) and Travelute et al (US 5,407,625). Li discloses a self-crimping foamed fiber made from polyester having a volume fraction of at least 10 % encompassing the claimed range (abstract). The foamed fiber has at least 5 cells per axial cross section as shown in figure 5. Li discloses silica as a nucleating agent present in the amount of at least 0.2 % by weight (column 3, line 35 and column 4, line 1-2). Li discloses the foamed fiber having a denier of 15 and a density less than 0.9 g/cc (table). Li discloses the fiber having a plurality of closed cells and open cells distributed over the cross-sectional area of the fiber (column 1, lines 10-15). Figure 5 shows that the foamed fibers

having a pitted surface. As shown in figures 6-10, the fiber has a fibrillated surface. Li does not specifically disclose the use of copolymer of polyester and polyethylene glycol for the filaments. Nichols, however, discloses a non-woven fabric material made from filaments of a polyester modified with polyethylene glycol in the amount of 6% by weight to 16% by weight to increase the wetting and wicking properties of the fabric while maintaining the elasticity of the polyester fibers. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the copolymer of polyester and polyethylene glycol for the polyester filament motivated by the desire to increase the wetting and wicking properties of the fabric while maintaining the elasticity of the polyester fibers.

It appears that Li as modified Nichols uses the same copolymer as Applicants, namely copolymer comprising polyester and polyethylene glycol present in amount of between about 6 to 10 wt%. Therefore, it is the examiner's position that the polyester copolymer would substantially inherently have a greater elasticity than a corresponding monomer-based polyester.

Li does not specifically disclose that the self-crimped foamed fiber is hollow. However, Li mentions the hollow fibers are known in the art. Therefore, there are no reasons why not to form the hollow self-crimped foam fibers. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the hollow self-crimped foamed fibers motivated by the desire to reduce the weight and the cost of the product without affecting the mechanical strength of the fibers.

Li does not specifically disclose the self-crimped foamed fiber having different degrees of orientation along at least two adjacent longitudinal portions of the fiber. Travelute, however, teaches self-texturing filament having different degrees of orientation along at least two adjacent longitudinal portions of the filament. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the foamed fibers having different degrees of orientation along at least two adjacent longitudinal portions of the filament by preferentially directionally quenching as disclosed by Travelute because the differences in orientation cause the filament to shrink to different extents on the opposite sides of its cross section, thereby enhancing the crimping of the fibers, i.e., a helical or spiral crimp of the filament is obtained.

Response to Arguments

13. The art rejections over Siggel in view of Nichols and Soehngen have been maintained for the following reasons. Applicants argue that "the examiner has no reasonable grounds to apply the Nichols patent against claim 1 other than a hindsight desire to find a reference that includes a copolymer". That is not true because there is guidance or reasonable expectation of success for using the copolymer (abstract, column 5, lines 18-21 of Nichols), the combined teachings of Siggel and Nichols do make out a *prima facie* case of obviousness. Additionally, the fact that applicants have recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability

when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

It appears that Siggel as modified Nichols uses the same copolymer as Applicants, namely copolymer comprising polyester and polyethylene glycol present in amount of between about 6 to 10 wt%. Therefore, it is the examiner's position that the polyester copolymer would substantially inherently have a greater elasticity than a corresponding monomer-based polyester.

Applicants argue that one skilled in the art would not be motivated to look to Soehngen for the amount of nucleating agent because Soehngen discloses a different method forming the pores of the fibers. The arguments are not found persuasive for patentability because Soehngen and Siggel are analogous art, i.e., both drawn to porous polyester fibers. Siggel discloses the use of silica as a nucleating agent with the polyester fiber but Siggel does not specifically disclose how much the nucleating agent is used. Soehngen, however, teaches the use of silica or PTFE particle with a particle size of 0.5 to 1 microns as a nucleating agent for the formation of polyester filaments (column 5, lines 25-30, 45-50). Soehngen teaches the nucleating agent present in the amount of 0.01 to 1 % by weight of the polyester composition. It does not matter whether Soehngen and Siggel use the same approach for producing porous fibers to establish a prima case of obviousness; but it does matter there is guidance or reasonable expectation of success of using a nucleating agent with an amount as taught by Soehngen in the Siggel polyester composition. In this case, one skilled in the art would be motivated

to use the nucleating agent with the amount as taught by Soehngen motivated by the desire to aid the formation of the voids during the spinning process.

14. The 102 art rejections over Li have been maintained for the following reasons.

Applicants argue that Li fails to teach the irregular longitudinal surface effects that in length are at least an order of magnitude greater than the average diameter of the fibers and that in width are at least an order or magnitude smaller than the average diameter of the fibers. The examiner respectfully disagrees. The examiner directs Applicants' attention to the specification of the present invention, the surface effects (smooth, fibrillated, channeled and pitted) are dictated by the void volume, cells per axial cross section and total stretch ratio of both spinning and drawing. Li discloses a fiber having the void volume, cells per axial cross section and total stretch ratio of both spinning and drawing within the claimed ranges. Therefore, it is not seen that the fiber could not have the irregular longitudinal surface effects as set forth in the claims.

The art rejections over Li in view of Nichols have been maintained for the following reasons. Applicants argue that neither pending claims nor the pending specification refer to wicking or wetting properties for using the copolymer. Applicants further contend that "the motivation rests entirely with the subjective interpretation for the examiner rather than the objective content of the prior art". The arguments appear to be flawed. There is guidance or reasonable expectation of success for using the copolymer (abstract, column 5, lines 18-21 of Nichols), the combined teachings of Li and Nichols do make out a *prima facie* case of

obviousness. Additionally, the fact that applicants have recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

It appears that Li as modified Nichols uses the same copolymer as Applicants, namely copolymer comprising polyester and polyethylene glycol present in amount of between about 6 to 10 wt%. Therefore, it is the examiner's position that the polyester copolymer would substantially inherently have a greater elasticity than a corresponding monomer-based polyester.

Applicants have reiterated positions taken with respect to the rejections over Li in view of Nichols and Travelute, the examiner's comments set forth above are equally pertinent in the support of these rejections as well. The examiner has provided a detailed analysis as to why Li discloses the irregular longitudinal surfaces. The examiner incorporates those arguments by reference.

Conclusion

15. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action

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is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai Vo whose telephone number is (571) 272-1485. The examiner can normally be reached on M,T,Th, F, 7:00-4:30 and on alternating Wednesdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HV

Hai Vo

**HAIVO
PRIMARY EXAMINER**